REMARKS

Claims 1 through 21 are in the application, with Claims 1, 10, 11, 13 and 15 having been amended, and with Claims 8, 14 and 20 having been cancelled. Claims 1, 10 and 15 are the independent claims herein. No new matter has been added. Reconsideration and further examination are respectfully requested.

Claims 1-4 and 10-14 are rejected under 35 U.S.C. §102 by U.S. Patent No. 6,853,169 ("Burstein"); and Claims 5-9 and 15-21 are rejected under 35 U.S.C. § 103 over U.S. Patent No. 6,218,817 ("Chang") in combination with Burstein and U.S. Patent No. 6,865,682 B1 ("Talbot"). Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 1 and 10

Amended independent Claim 1 relates to an apparatus including a voltage regulator converter and a voltage regulator controller. The voltage regulator converter includes N (N>1) phases, and the voltage regulator converter is to control a first one of the N phases to output a first current and to control a second one of the N phases to output a second current. The first output current is different from the second output current. As described in the present specification, embodiments of the foregoing may allow a phase located in a thermally-sensitive area to generate less heat than another of the N phases.

The art of record is not seen to disclose or to suggest the foregoing features of amended independent Claim 1. Specifically, the art of record is not seen to disclose or to suggest control of a first one of N voltage regulator converter phases to output a first current and control of a second one of the N phases to output a second current, where the first output current is different from the second output current.

Burstein describes voltage regulator 10 that includes controller 18 and three or more slaves 16. Each slave 16 includes switching circuit 24 and output filter 28. Controller 18 controls each switching circuit 24 to supply energy to output terminal 22 via each output filter 28.

Current sensors 40 and 42 sense internal currents of each slave 16 and output signals that indicate whether the internal currents are greater than or less than various predefined trigger

current values. Column 6, lines 55 to 65 of Burstein indicate that these predefined trigger values may differ for each current sensor 40 and 42, but do not indicate that any currents actually generated by or present within any two slaves 16 differ from one another. Moreover, nowhere does Burstein disclose or suggest that any two slaves 16 output different currents to output terminal 22.

Accordingly, Burstein is not seen to disclose or suggest control of a first one of N voltage regulator converter phases to output a first current and control of a second one of the N phases to output a second current, where the first output current is different from the second output current. Amended Claim 1 is therefore believed to be in condition for allowance.

Amended Claim 10 is a method also relating to control of a first one of N voltage regulator converter phases to output a first current and control of a second one of the N phases to output a second current, where the first output current is different from the second output current. Claim 10 and its dependent claims are also believed to be allowable.

Claim 15

Amended Claim 15 concerns a system including a microprocessor, a double data rate memory coupled to the microprocessor, and a voltage regulator to provide a voltage to the microprocessor. The voltage regulator includes a voltage regulator converter having N (N>1) phases, and a voltage regulator controller coupled to the voltage regulator converter and to control a first one of the N phases of the voltage regulator converter to output a first current and to control a second one of the N phases to output a second current. The first output current is different from the second output current.

The art of record is not seen to disclose or to suggest at least control of a first one of N phases of a voltage regulator converter to output a first current and control of a second one of the N phases to output a second current that is different from the first output current. Burstein, as described above, fails to disclose or to suggest control of a first one of N phases of a voltage regulator converter to output a first current and control of a second one of the N phases to output a second current that is different from the first output current.

Neither Chang nor Talbot is seen to remedy the deficiencies in Burstein with respect to amended Claim 15. In particular, neither Chang nor Talbot is cited as disclosing nor seen to disclose control of a first one of N phases of a voltage regulator converter to output a first current and control of a second one of the N phases to output a second current that is different from the first output current. Claim 15 is therefore believed to be allowable.

CONCLUSION

The outstanding Office Action presents a number of characterizations regarding each of the applied references, some of which are not directly addressed herein because they are not related to the rejections of the independent claims. Applicants do not necessarily agree with the characterizations and reserve the right to further discuss those characterizations.

For at least the reasons given above, it is submitted that the entire application is in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience. Alternatively, if there remains any question regarding the present application or any of the cited references, or if the Examiner has any further suggestions for expediting allowance of the present application, the Examiner is cordially requested to contact the undersigned via telephone at (203) 972-0049.

Respectfully submitted,

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